

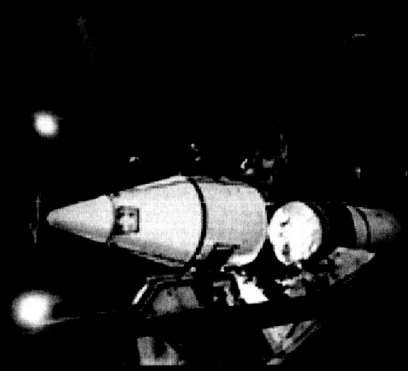


# Space Shuttle

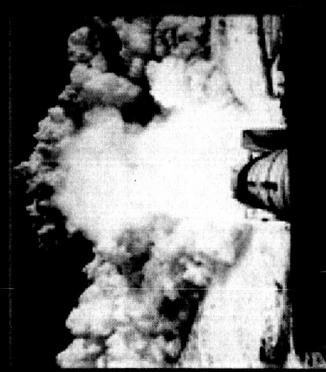
**Lisa Roberts**  
**Shuttle Propulsion Office**  
**June 27, 2005**



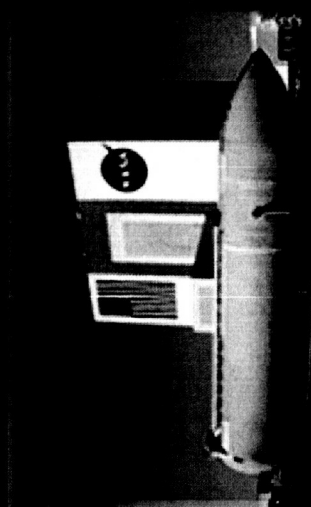
# Space Shuttle Propulsions Systems



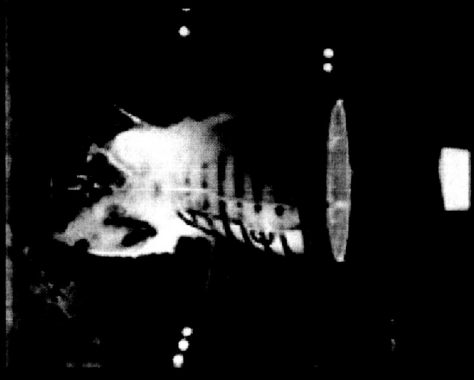
*Solid Rocket Booster*



*Reusable Solid Rocket Motor*



*External Tank*

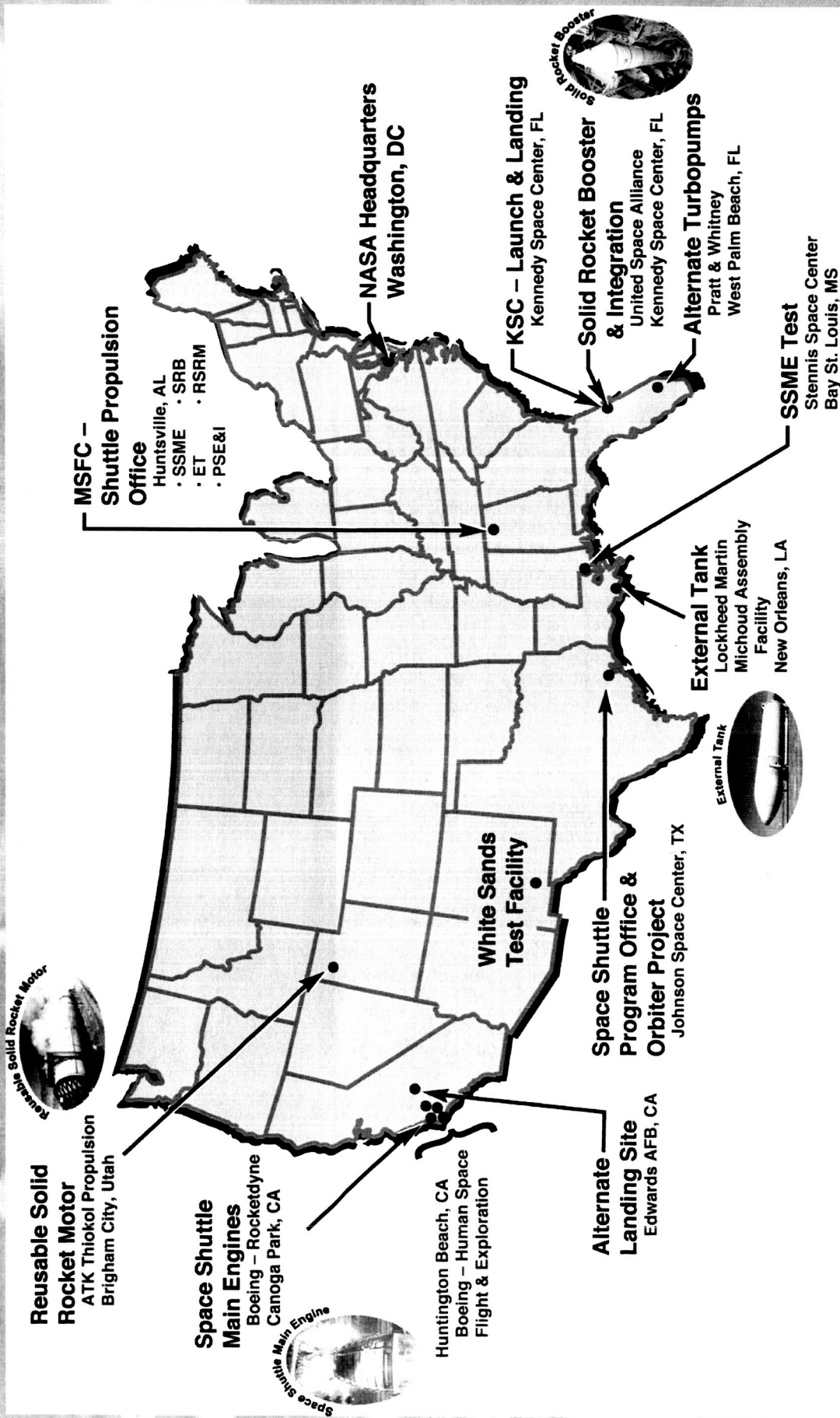


*Space Shuttle Main Engine*





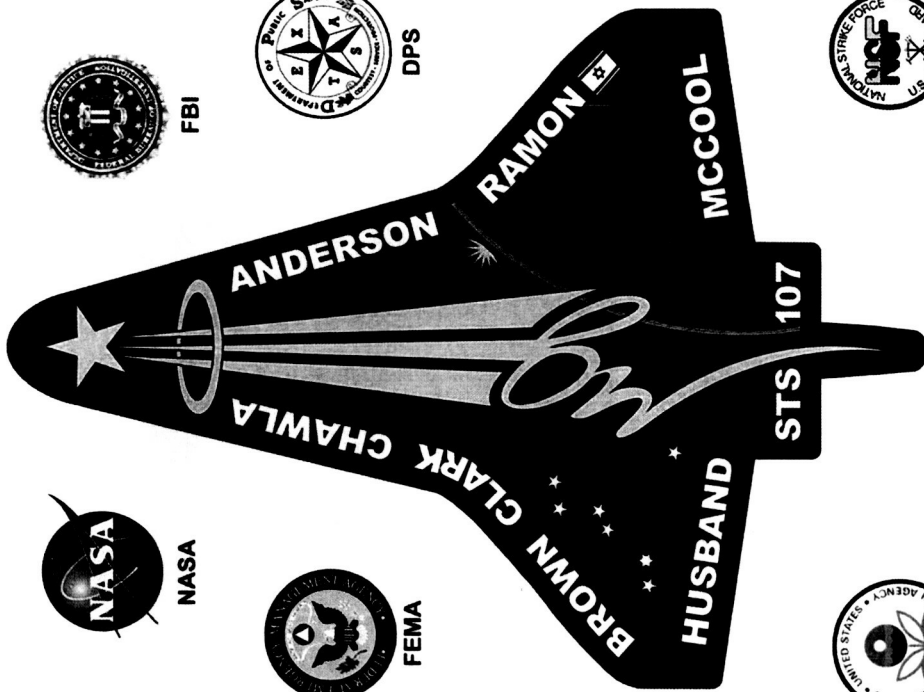
# Space Shuttle & Contractor Partners



10/21/04

SSP-97-023

SSP-05-1602



NASA



FBI



FEMA



DPS



URBAN SEARCH &  
RESCUE BLUE 1ST



TEXAS NATIONAL  
GUARD



TEXAS TASK  
FORCE ONE



USFWS



EPA



USFS



NPS



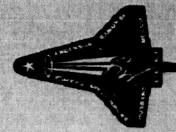
USCG



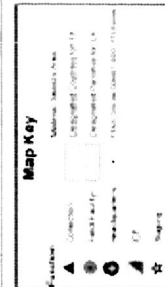
6TH & 64TH  
CST (WMD)



TEXAS  
FOREST SERVICE  
The Texas A&M University System



(as of 1800 hours on March 18, 2003)

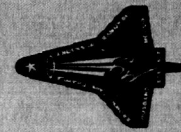


Columbia Shuttle Disaster  
East Texas Federal Response  
Lufkin Emergency Operations Center  
415 S First Street  
Lufkin, Texas 75901

Production  
Date: March 18, 2003  
Time: 1800  
By: Karen Anderson  
Requested: John Peir  
File Name:

GIS/Planning Section • (938) 699-1077 ShuttleRecoveryOp E 03182003





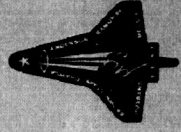
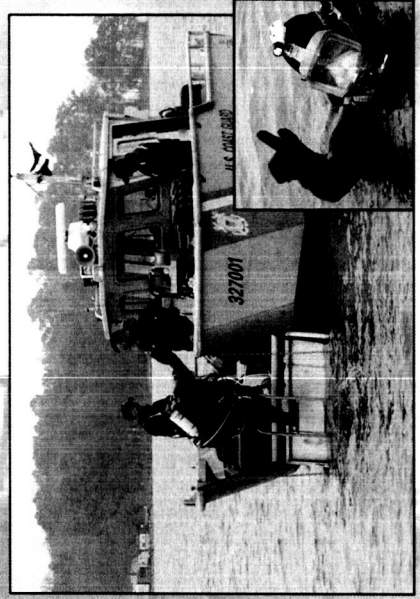


- Air searching 10-mile x 240-mile corridor along flight path from Ellis County to Toledo Bend Reservoir



- Ground searching 4-mile x 240-mile corridor along flight path
- Total Acres searched – 257,090

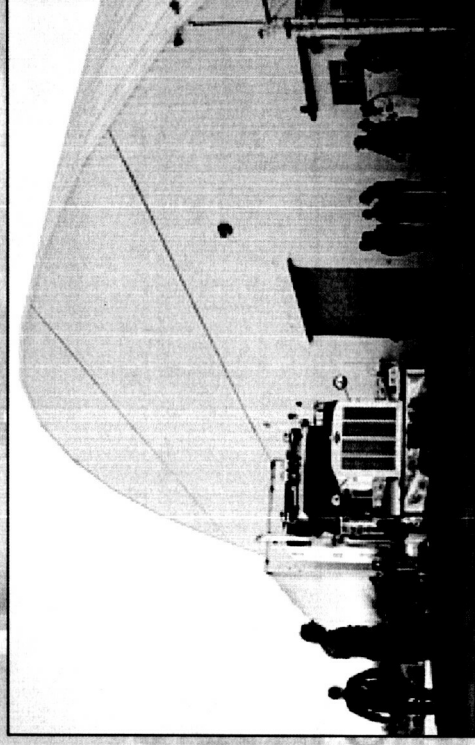
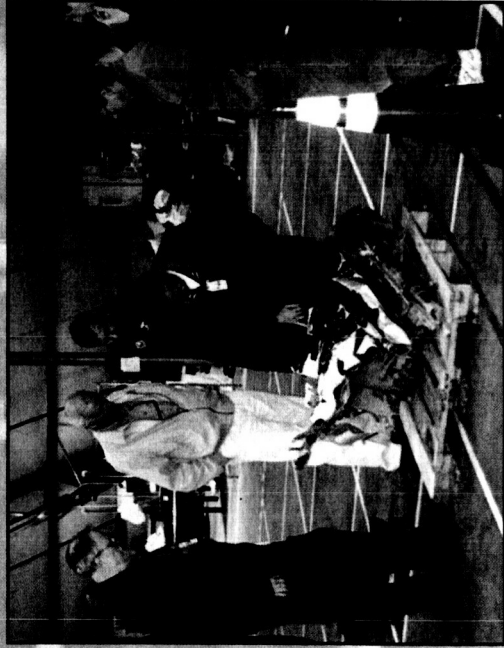
- Water search of a 30.26 nautical Mi<sup>2</sup> area of Toledo Bend Reservoir plus Lake Nacogdoches



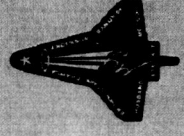




- All retrieved material shipped to
- Barksdale AFB or Johnson Space Center



- All material from BAFB and JSC shipped to  
Kennedy Space Center







- **Investigation Complete**

**August 2003**



- **CAIB Report Issued**

**August 2003**



- **NASA Implementation Plan Issued**

**September 2003, updated March 18, 2005**

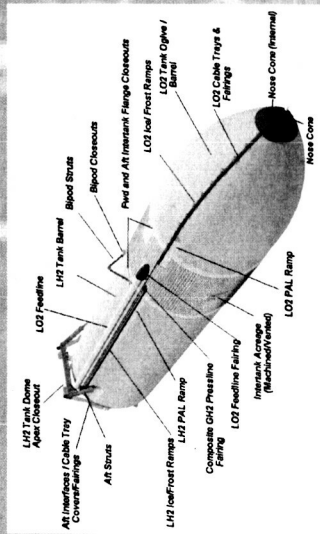


- **Find It, Repair It, Fly It**

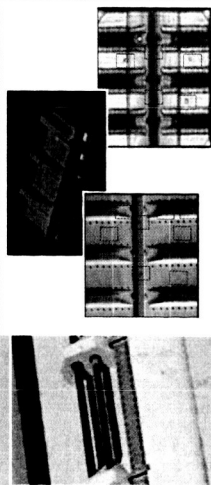


**STS-107 Columbia Accident Investigation Board (CAIB)  
Recommendation for the External Tank  
Thermal Protection System**

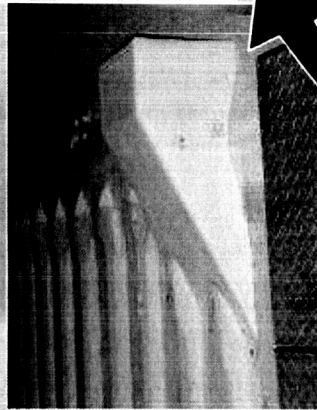
**“Initiate an aggressive program to  
eliminate all External Tank Thermal  
Protection System debris-shedding at  
the source with particular emphasis on  
the region where the bipod struts attach  
to the External Tank.”**



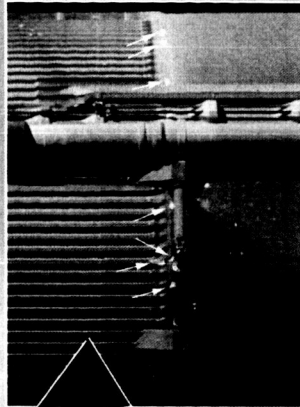
# TPS Certification Assessment



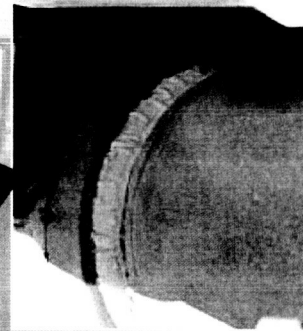
## Non-Destructive Evaluation Development



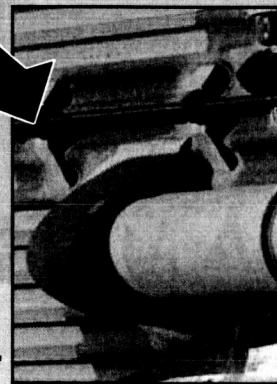
## Redesign Bipod Fitting To Eliminate Foam Ramp



## Intertank / LH<sub>2</sub> Tank Flange



## LO<sub>2</sub> Feedline Bellows Ice Elimination



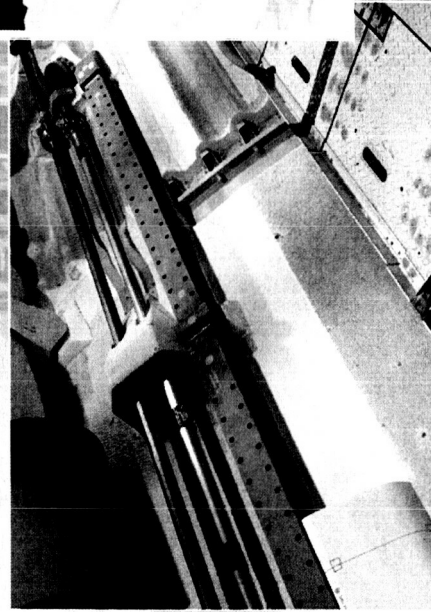
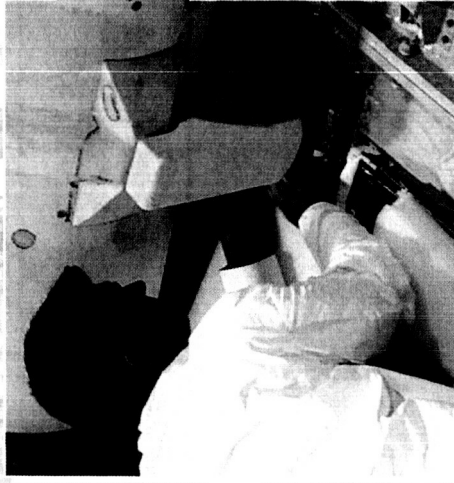
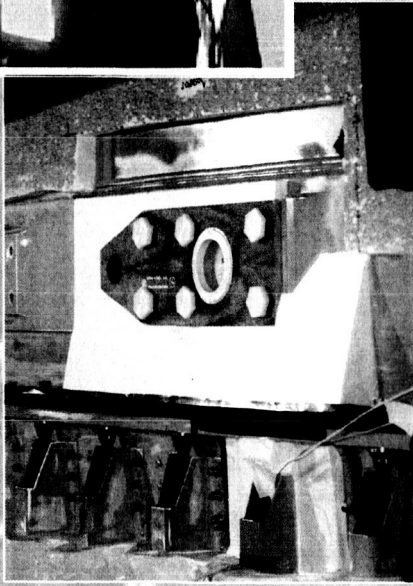
## Enhance In-Flight Imagery





# External Tank Readiness

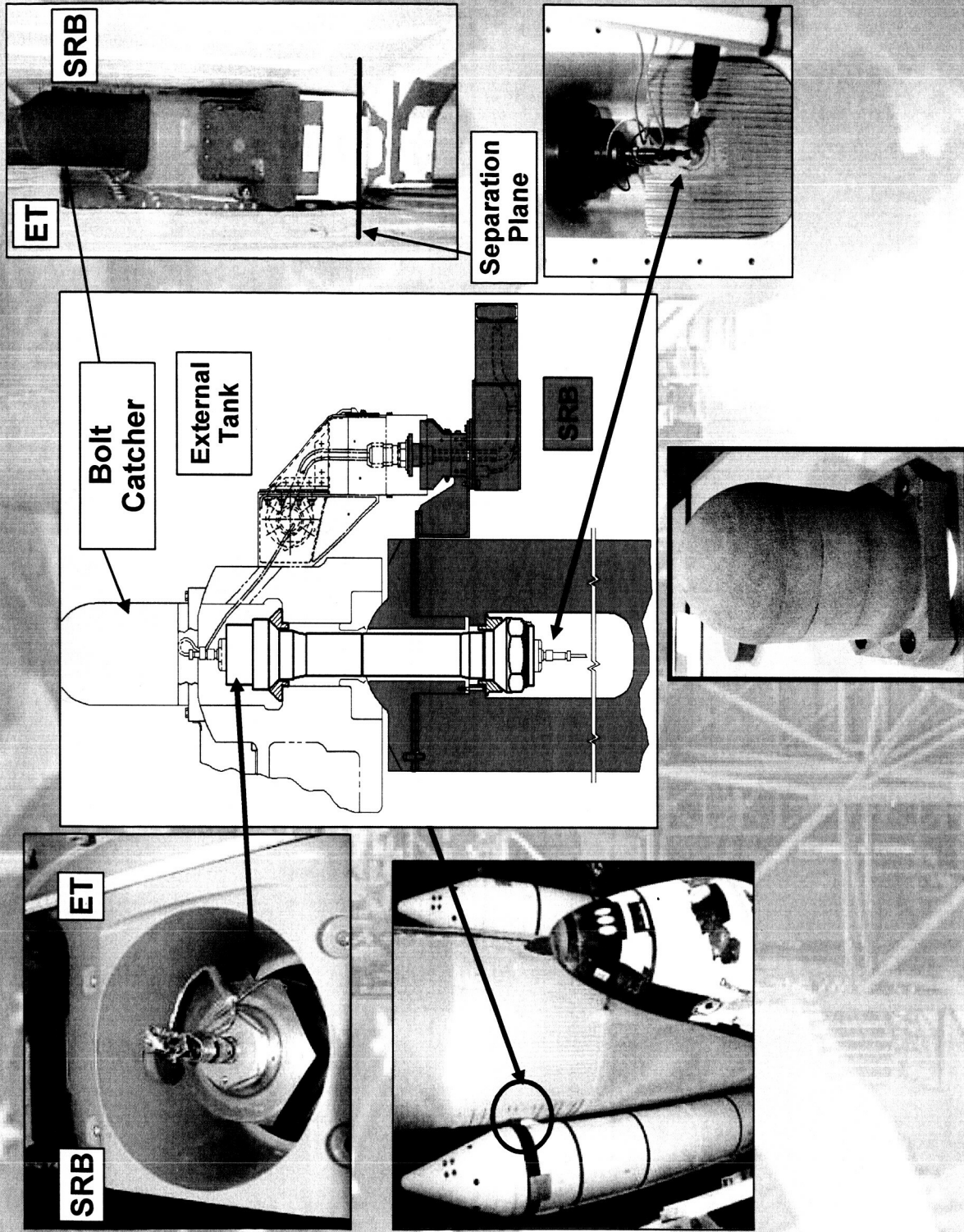
- Process controls have been implemented
- Retrofit operations have begun after design changes





# Solid Rocket Booster RTF Activities

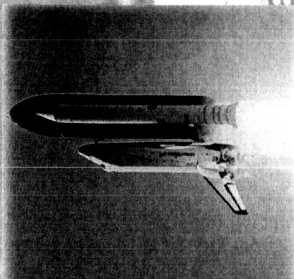
## *Bolt Catcher NASA Standard Initiator Pressure Cartridge Redesign*







# Propulsion Systems Engineering Integration

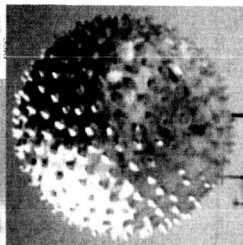


Technical Panels

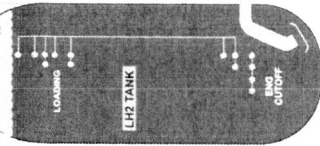
Main Propulsion System (MPS)



Shuttle Environmental Assurance



Upper Air Environments



Configuration Management/  
Launch Commit Criteria



Space Shuttle  
Electromagnetic  
Effects (EME)



Photographic  
Analysis



Shuttle Engineering  
Support Center/  
Data Management

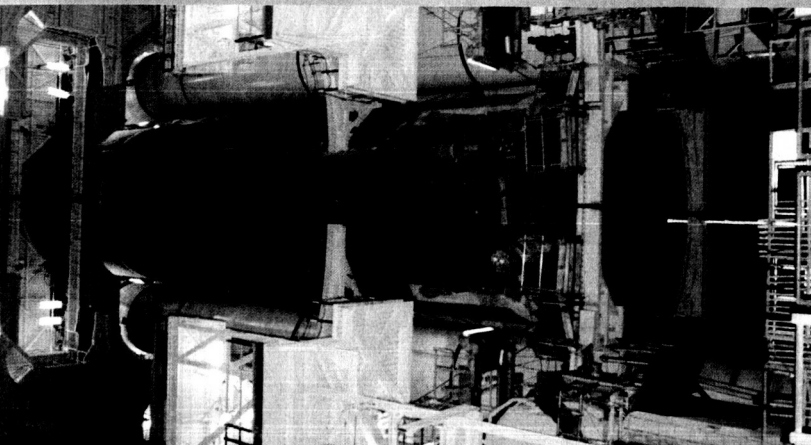
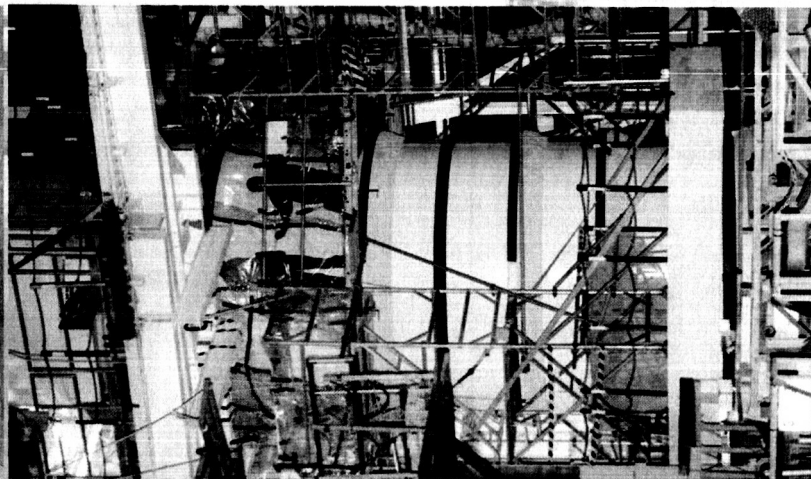
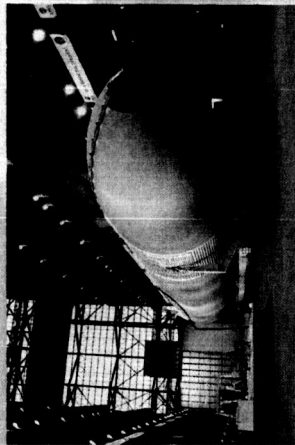
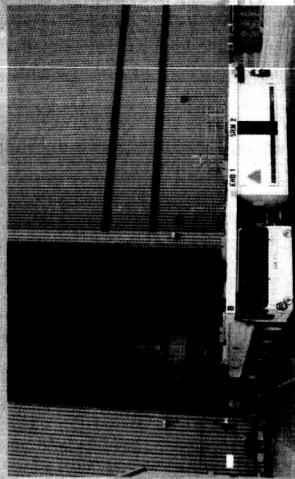
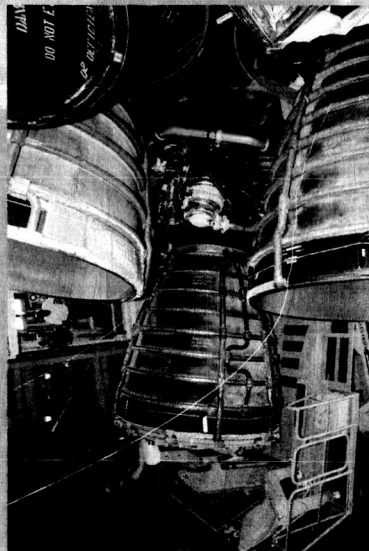


Debris Analysis





# Shuttle Propulsion Elements





# Shuttle Propulsion Team

**Spirit & Drive  
Strong Team**

**Return to flight is our #1 Priority**

*Resume Shuttle missions as soon as  
safely possible to mitigate ISS risks, resume  
assembly, and increase operations and  
utilization capabilities.*

**Technical  
Excellence**

**Schedule  
Commitment**

**Financial  
Management**

**Safety  
Commitment**



# Ready to Launch July 13, 2005

## STS-114

